

CS325 – attendance taking on moodle

The screenshot shows a Moodle attendance activity titled "Attendance cs325f21-a.sg Wed 08/09 1:30pm-4:50pm". The activity is set to be available from the DigiPen campus or from a remote location. It instructs users to confirm their attendance by selecting their individual section. A message states, "I am attending class today and my section is:" followed by a dropdown menu containing "cs325f21-a.sg". Below the dropdown, a note says, "The results of this activity will not be published after you answer." At the bottom, there are two buttons: "Save my choice" (circled in red) and "Remove my choice". The "Save my choice" button is highlighted with a blue border.

Time window:
1:15pm – 1:45pm

CS325
USER INTERFACE AND USER EXPERIENCE DESIGN
Week 1

Dr Frank Guan

Housekeeping

- Lecture online
 - Mute
 - Be focused and limit distractions
 - Questions:
 - Unmute and voice up

Daily User Frustrations

Do you know how to use **ALL** features of your...

- TV
- Smart watch
- Washing machine
- Microwave oven
- Photocopier
- Office phone...



How do you...



- Store a number
- Find the miss call info
- Transfer a call
- Redial a number?

How do you...



- Reheat something
- Program the clock?
- ...

Skype VS Zoom



zoom

Poor design can cost
money, time & even **lives**

Air Inter Flight 148

- 20 January 1992
- Crashed into the Vosges Mountains
(near Strasbourg, France)
- 87 fatalities, only 9 survivors
- Airbus A320
- Most advanced cockpit (at the time)
- Digital instruments





The pilot left the autopilot set in Vertical Speed Mode instead of Flight Path Angle Mode and then set “-33” for “-3.3° descent angle.

Flight Path Angle vs. Vertical Speed



After the accident, Airbus modified the interface of the autopilot so that a vertical speed setting would be displayed as a four-digit number, preventing confusion with the Flight Path Angle mode.

Anton Yelchin (Star Trek)



Anton Viktorovich Yelchin (11 March 1989 – 19 June 2016) was an American actor. He played [Pavel Chekov](#) in three [Star Trek](#) films: [Star Trek](#) (2009), [Star Trek Into Darkness](#) (2013), and the posthumously released [Star Trek Beyond](#) (2016).



- 19 June 2016
- Found dead pinned between Jeep and brick mailbox
- Home has steep driveway
- Jeep rolled backwards, engine still running, in neutral



E-Shifter, 2014-2015 Jeep Grand Cherokee

Operation of the gear selector is not intuitive and **provides poor tactile and visual feedback to the driver**, increasing the potential for unintended gear selection.



Normal gear selector

<http://www.theverge.com/2016/6/27/12043898/chrysler-jeep-dodge-electronic-gear-shift-recall-design-flaw-video>

16m ago

HNN

BREAKING:

There is no current ballistic missile threat. The emergency alert warning has been sounded by mistake, according to Civil Defense.

INSTAGRAM

17m ago

nfl just posted a photo.

HNN

18m ago

BREAKING:

Emergency alert issued to Hawaii phones: "Ballistic Missile threat inbound to Hawaii. Seek immediate shelter. This is not a drill."

EMERGENCY ALERTS

29m ago

Emergency Alert

BALLISTIC MISSILE THREAT INBOUND TO HAWAII.
SEEK IMMEDIATE SHELTER. THIS IS NOT A DRILL.

INSTAGRAM

1h ago

mieko.io just posted a video.

INSTAGRAM

1h ago

kkmmmk started a live video. Watch it before it ends!

INSTAGRAM

1h ago

charhungusut just posted a photo.

INSTAGRAM

1h ago



Hawaii False Incoming Missile Alert

- Jan 13, 2018
- Hawaii residents got alert on all phones and TV that a missile was inbound, and to take shelter immediately
- Cause was operator error
- Options on a drop-down menu had obscure names and were placed close to each other

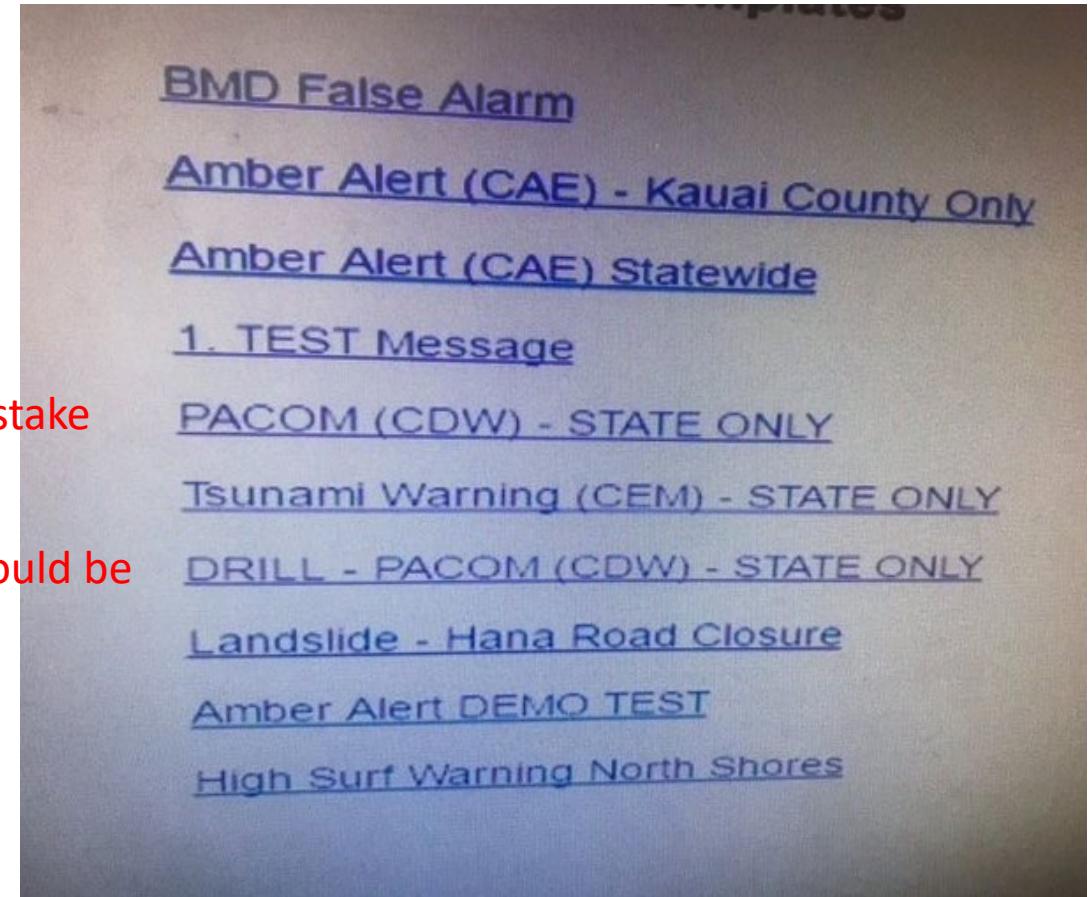
<https://www.theverge.com/2018/1/13/16888390/hawaii-missile-emergency-alert-false-alarm>

<https://www.theverge.com/2018/1/16/16896368/hawaii-false-missile-alert-system-confusing-interface-poor-design>

<https://www.theverge.com/2018/1/18/16905512/hawaii-missile-software-false-alarm-emergency-alert>

Mistake

Should be



CS325

USER INTERFACE AND USER EXPERIENCE DESIGN

- Module Introduction

About me

- Dr Frank Guan, PhD
Assistant Professor, SIT
- Research interests:
 - Virtual Reality (VR)
 - Augmented Reality (AR)
 - Artificial Intelligence (AI)
 - Passion for innovation and entrepreneurship
- Appointment by email:
Frank.Guan@singaporetech.edu.sg

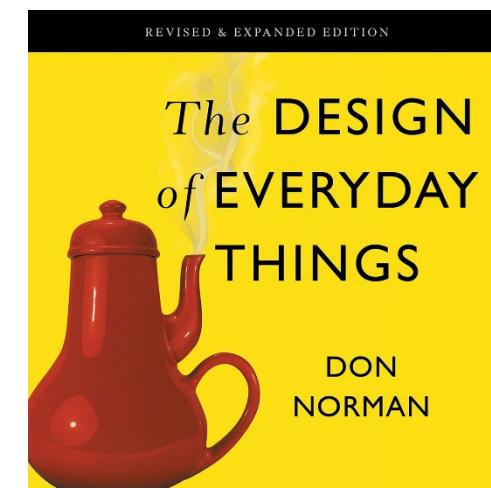
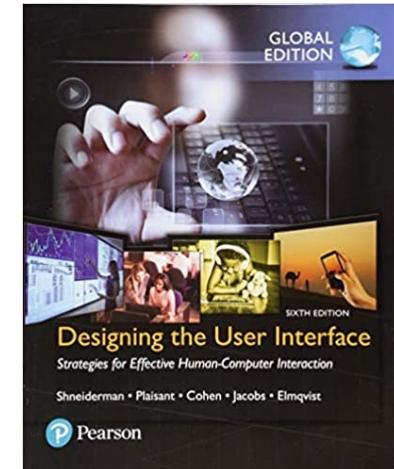
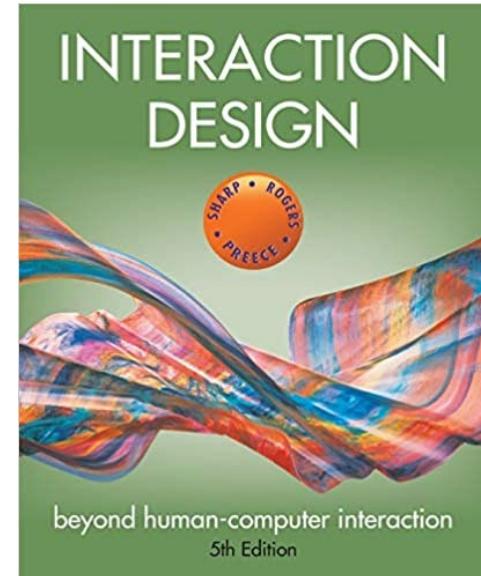


Learning outcomes

- understand the fundamental principles in user interface design
- understand interactivity and its relation to human context and technological systems
- learn how to implement prototype applications that demonstrate a particular design principle
- learn how to perform evaluation studies to test the effectiveness of developed interfaces
- apply the learnt knowledge to develop an interface for a given project.

References

- Interaction Design: Beyond Human-Computer Interaction, 5th Edition by Helen Sharp, Jenny Preece, Yvonne Rogers, ISBN-13: 978-1119547259, ISBN-10: 1119547253.
- Designing Interfaces: Patterns for Effective Interaction Design, 1st Edition by Jenifer Tidwell ISBN-13: 978-0596008031, ISBN-10: 0596008031.
- 100 Things Every Designer Needs to Know About People (Voices That Matter), 1st Edition by Susan Weinschenk ISBN-13: 860-1401301257, ISBN-10: 0321767535.
- Designing the User Interface: Strategies for Effective Human-Computer Interaction, 6th Edition by Ben Shneiderman, Catherine Plaisant, Maxine Cohen, Steven Jacobs, Niklas Elmquist, Nicholas Diakopoulos, ISBN-13: 978-0134380384, ISBN-10: 9780134380384.
- The Design of Everyday Things: Revised and Expanded Edition by Don Norman, ISBN-13: 978-0465050659, ISBN-10: 9780465050659.



Some slides were attributed to A/P Jeannie Lee from SIT

Oh...another important thing



<https://www.youtube.com/watch?v=SqGRnIXplx0>

So, use your time wisely



About CS325 - assessment

Assessment Item	Weighting
1 Group Project	35%
3 Homework Assignments	15% (5% each)
1 Mid-term Exam	15%
1 Final Exam	35%
Total	100%

Attendance Policy:

- Students are expected to attend all classes in a timely manner.
- Students more than 15 minutes late to class will be marked as absent for that entire class.
- Students may not leave class early without instructor's permission.
- Students absent from all classes for a period of 14 consecutive days without valid reason may be administratively withdrawn from the Institute as of their last day of attendance.
- To apply for your absences to be excused, please submit your documents (Medical Certificate, Reservist notice etc) to SRS within 7 calendar days of your return.
- Unexcused absences would result in the following penalty to your final grade.

Number of classes conducted per week	Total number of sessions in 12 instructional weeks	1 letter grade down for the number of unexcused absences	2 letter grade down for the number of unexcused absences
1	12	2	4

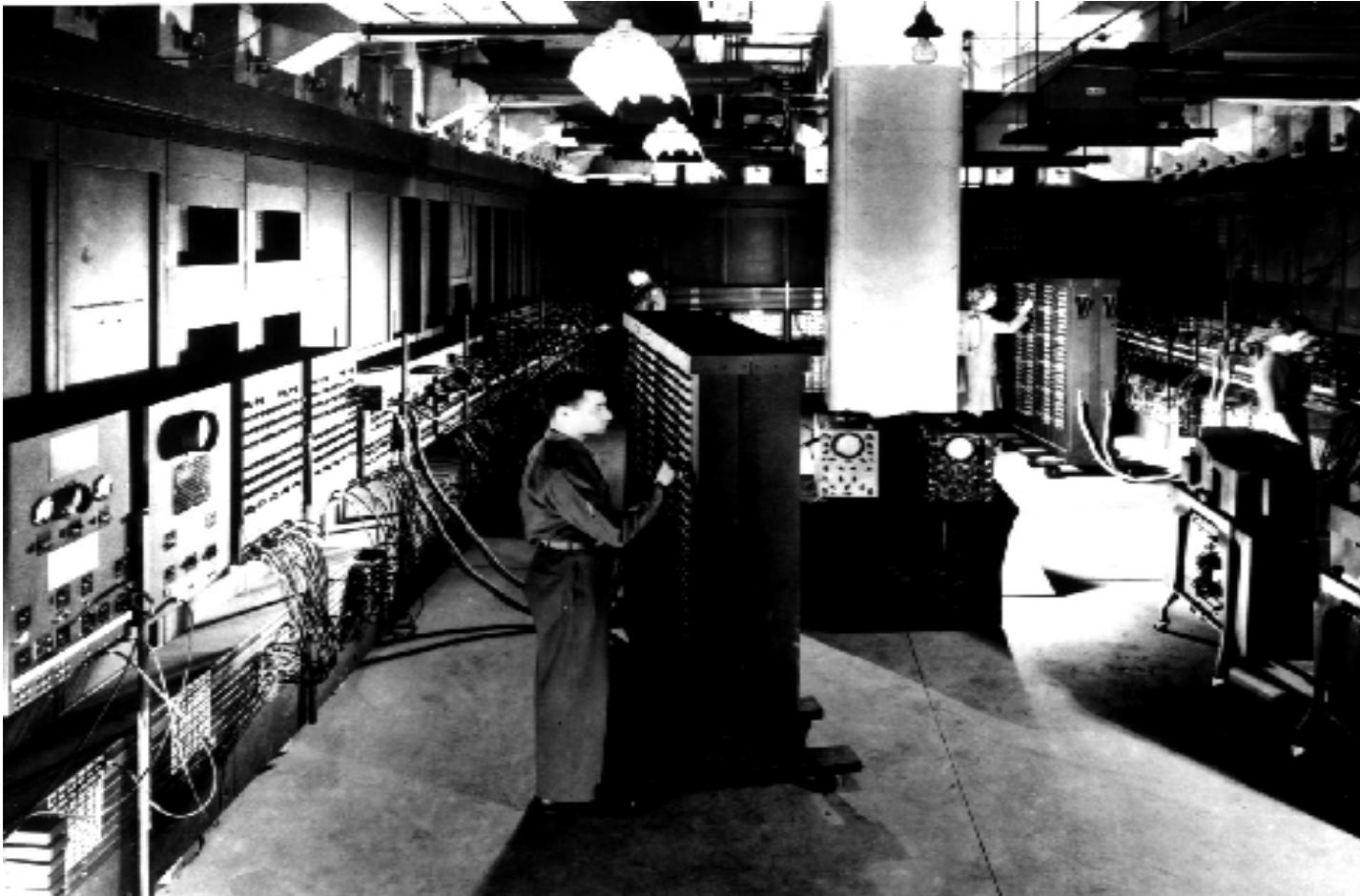
History of HCI

Early history of computer

- Digital computer grounded in ideas from 1700's & 1800's
- Technology became available in the 1940's and 1950's

1st fully functional digital computer

The ENIAC: Electronic Numerical Integrator And Computer (1943 – 1946)



John Presper Eckert (1919-1995)
and
John Mauchly (1907-1980)

University of Pennsylvania Moore School of
Engineering

50 tons, 18K vacuum tubes, with the computing power of little more than the modern calculator.....

High cost of earlier computing devices

Typical 1968 prices—Excluding maintenance & support!

Model	Description	Purchase Price	Installation Fee
3011-95	1108 CPU	\$566,460	\$2,200
7005-72	131 K word Core Memory	\$823,500	\$2,250
5009-00	FASTRAND™ Controller	\$41,680	\$600
6010-00	FASTRAND II Storage Unit	\$134,400	\$1,080
5012-00	FH-432/FH-1782 Drum Controller	\$67,360	\$600
6016-00	FH-432 Drum (capacity 262,144 words)	\$34,640	\$480
6015-00	FH-1782 Drum (capacity 2,097,152 words)	\$95,680	\$540
4009-99	Console (TTY-35)	\$29,365	\$200

In total: US\$1.8 Million in 1968

Computers too expensive for individuals

- increased accessibility
- interactive systems, not jobs
- text processing, editing
- email, shared file system

Vision and goals (1945 – 1995)

- Immediate

- Interactive, real-time system
- Large scale information storage and retrieval
- Time sharing
- Electronic I/O

- Intermediate

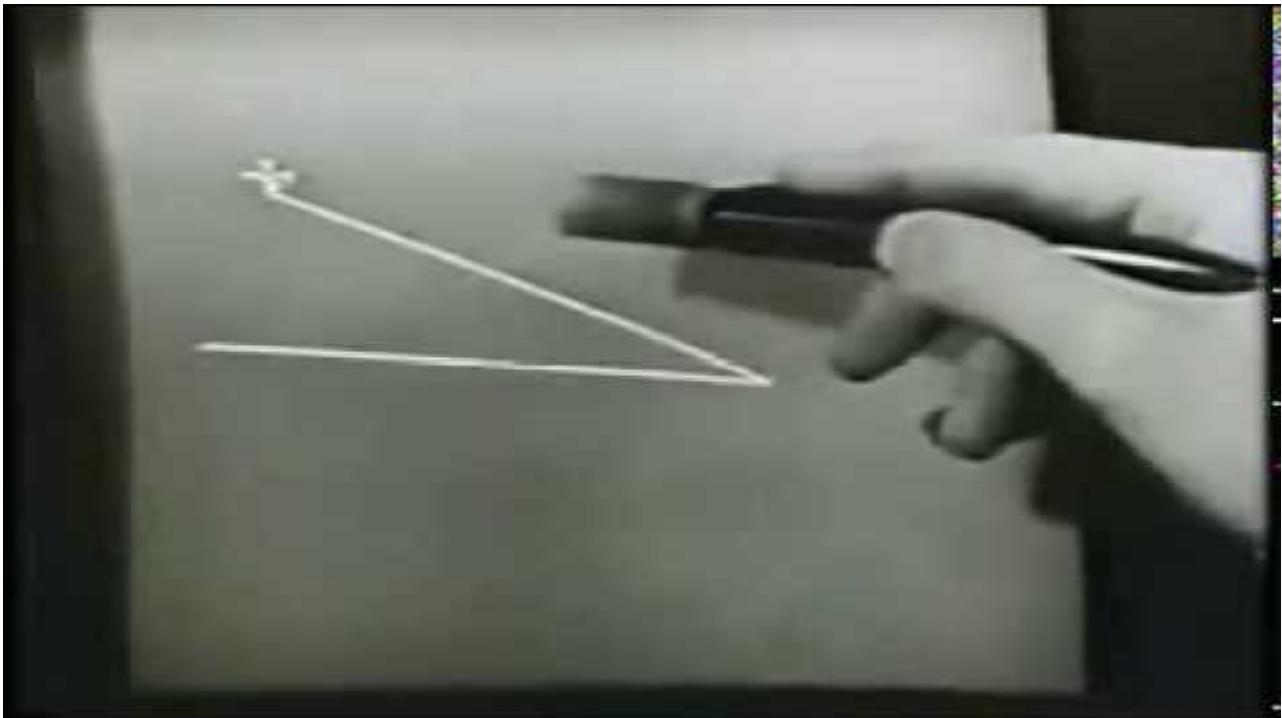
- Combined speech recognition, character recognition, light-pen editing

- Long-term

- Natural language understanding
- Speech recognition of arbitrary users
- Heuristic programming

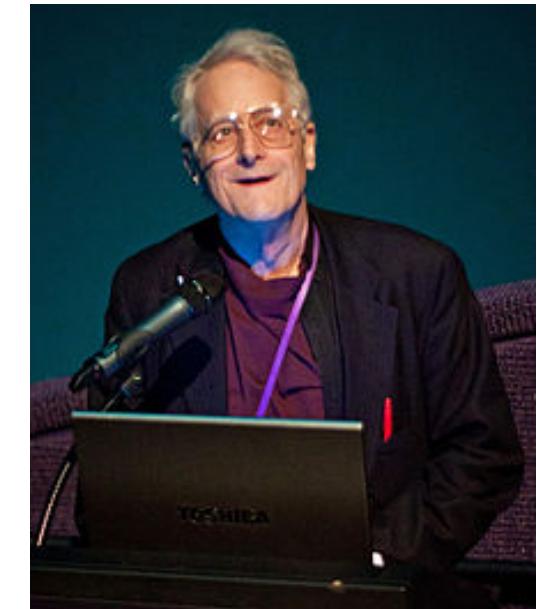
Ivan Sutherland

- **SketchPad** - 1963 PhD thesis at MIT
 - Hierarchy - pictures & subpictures
 - Master picture with instances
 - Constraints
 - Icons
 - Copying
 - Light pen as input device
 - Recursive operations

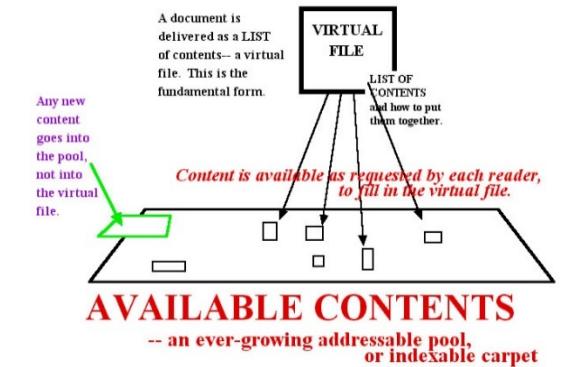


Ted Nelson

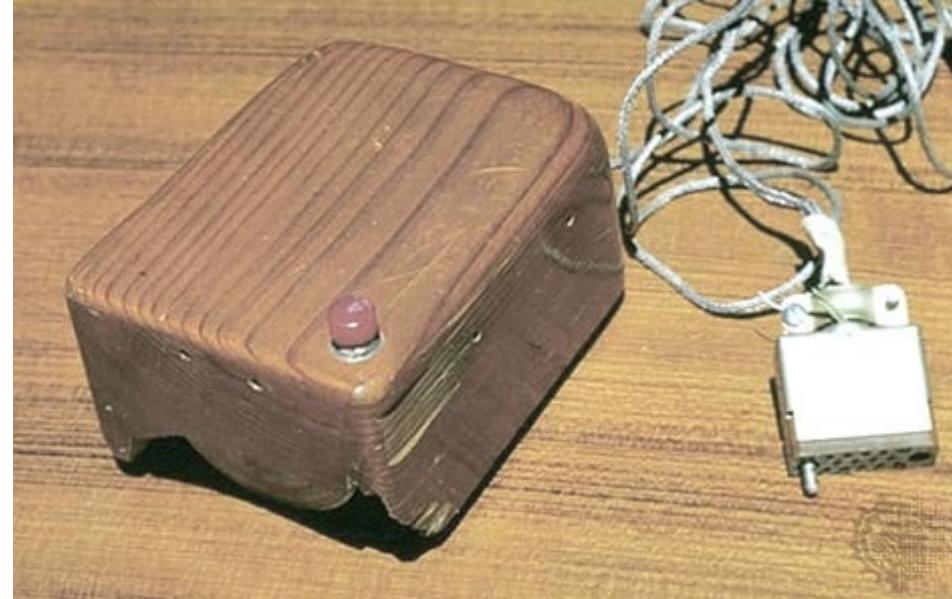
- Coined term “hypertext” and “hypermedia” (1963)
- Designed Xanadu in 1981
 - – Global hypertext
 - – Pay-per-view
 - – Not funded until 1987
- Hypertext as a more natural medium than linear text for creative writing
- “I build paradigms. I work on complex ideas and make up words for them. It is the only way.”



AN AUTHOR-BASED, LITERARY AND CULTURAL DESIGN
The Xanadu Document Model
— built on the assumption of perpetual change and re-use



The Mouse (1964)



Doug Engelbart's mouse, Stanford Research Lab, 1964

Douglas Engelbart's mouse (1964)



NEED COFFEE!!



Need a Break?

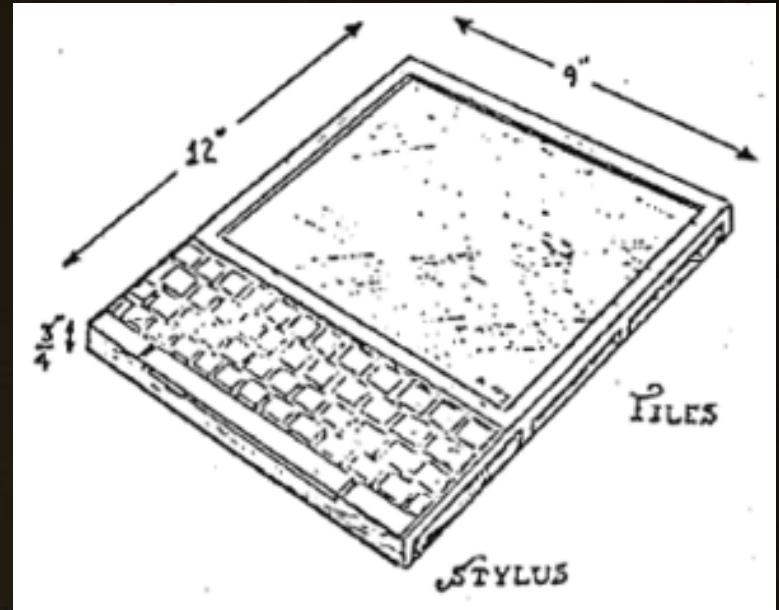
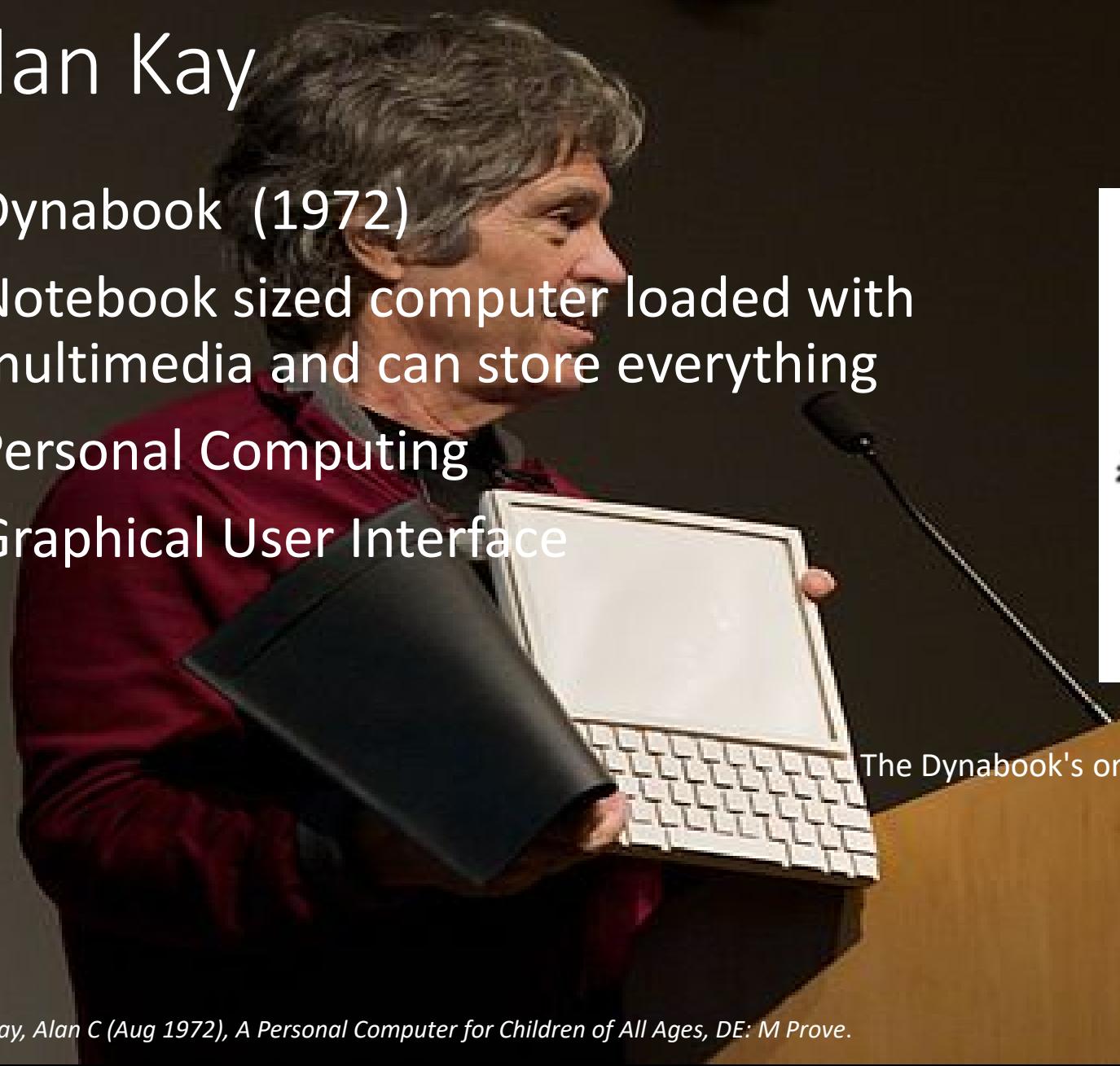
Nicholas Negroponte (1943 -)

- In 1967, founded MIT Architecture Machine Group, a combination lab and think tank which studied new approaches to human-computer interaction
- Founding Director of MIT Media Lab (1985)
- Ideas:
 - wall-sized displays
 - video disks
 - AI in interfaces (agents)
 - speech recognition
 - multimedia with hypertext



Alan Kay

- Dynabook (1972)
- Notebook sized computer loaded with multimedia and can store everything
- Personal Computing
- Graphical User Interface



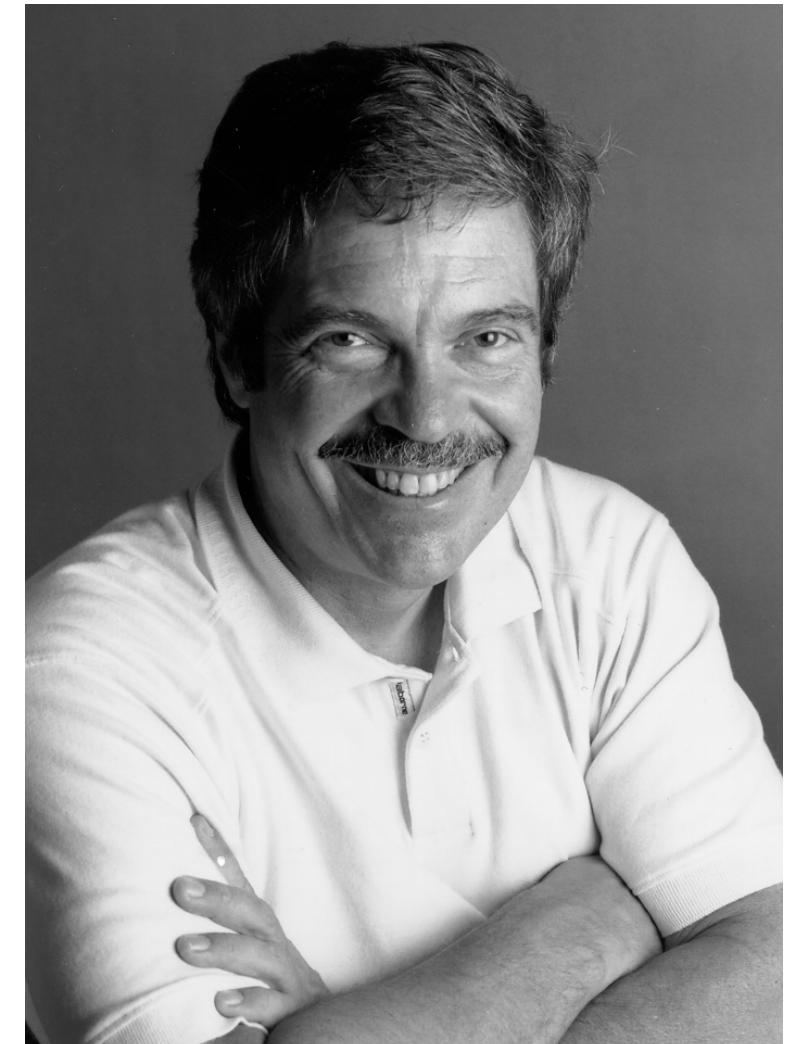
The Dynabook's original illustration in Alan C. Kay's 1972 paper

Kay, Alan C (Aug 1972), *A Personal Computer for Children of All Ages*, DE: M Prove.

Alan Kay (1940 -)

- Ph.D. 1969 (Utah) Computer Graphics
- Moved to Xerox PARC in 1972
- First general OO programming language
- His quote:

“"Don't worry about what anybody else is going to do...**The best way to predict the future is to invent it.** Really smart people with reasonable funding can do just about anything that doesn't violate too many of Newton's Laws!"
- Mentee of Dr Ivan Sutherland



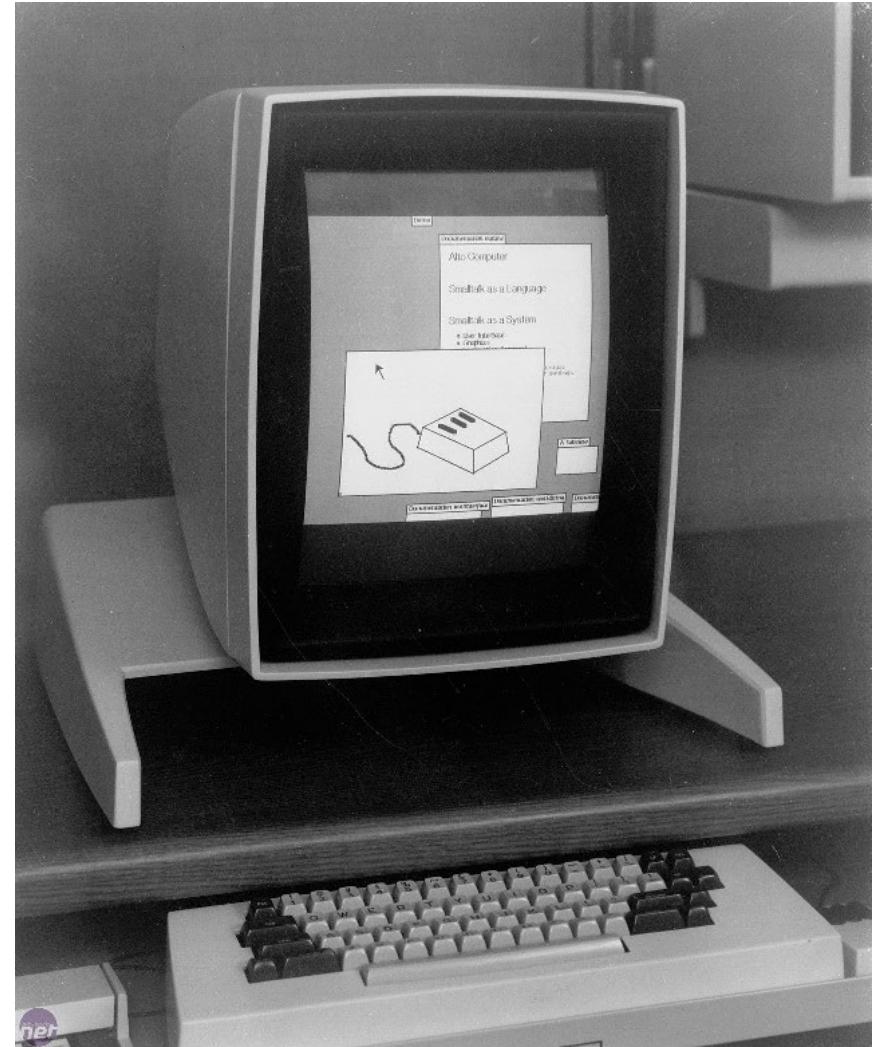
Personal computers

- Late 1970's
 - Apple II
 - Z-80 CP/M
 - IBM PC
- Text and command based
- Applications
 - Word processing
 - Spreadsheets

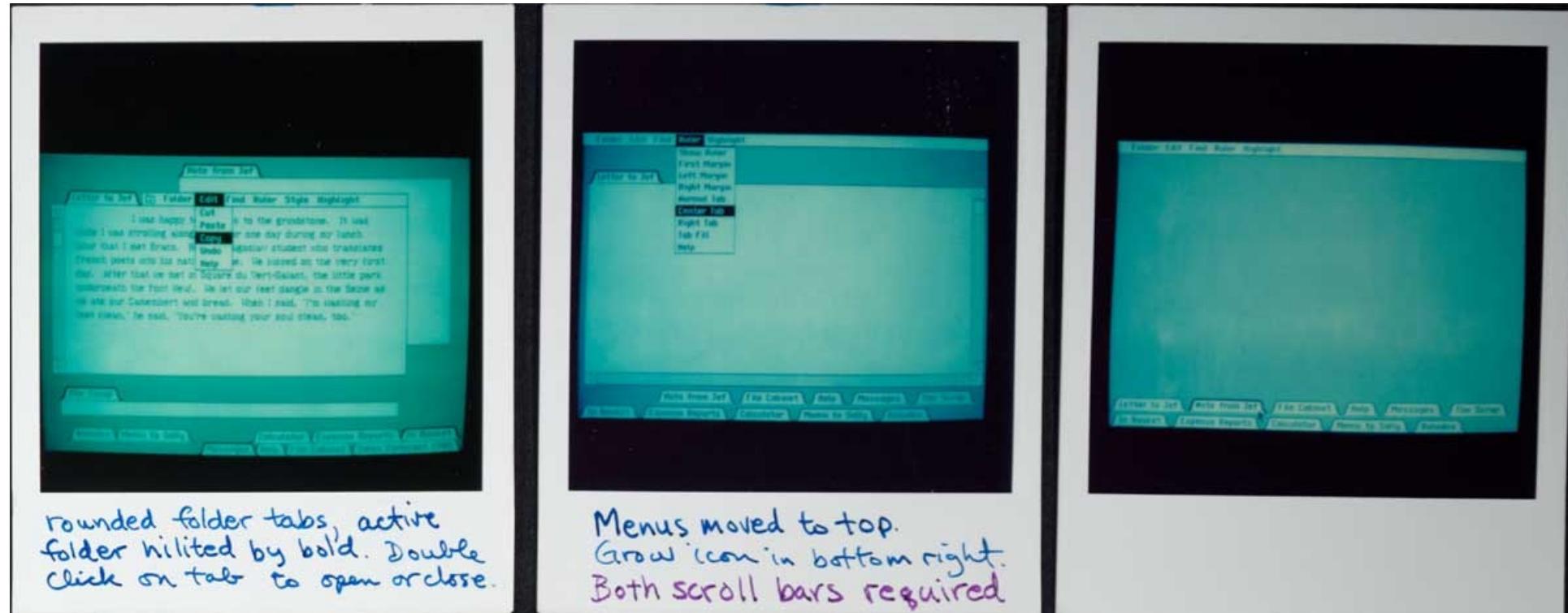


PCs with GUIs

- Xerox PARC - mid 1970's
 - Local processor
 - Bitmap display
 - Mouse
 - Precursor to modern GUI
 - LAN - Ethernet



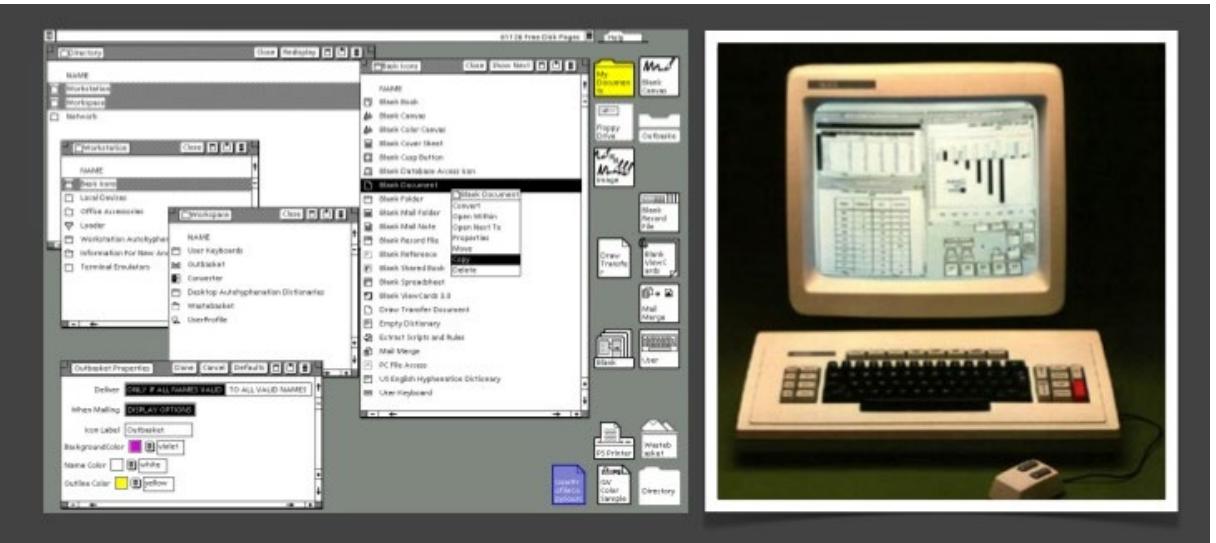
Menus



Bill Atkinson's Polaroids of the first pull-down menu prototype - circa 1979

Xerox Star - 1981

- First commercial PC designed for “business professionals”
 - Desktop metaphor
 - Pointing
- First system based on usability engineering
- Bitmapped display, windows, icons, menus, pointer,
- desktop, direct manipulation, WYSIWYG ...

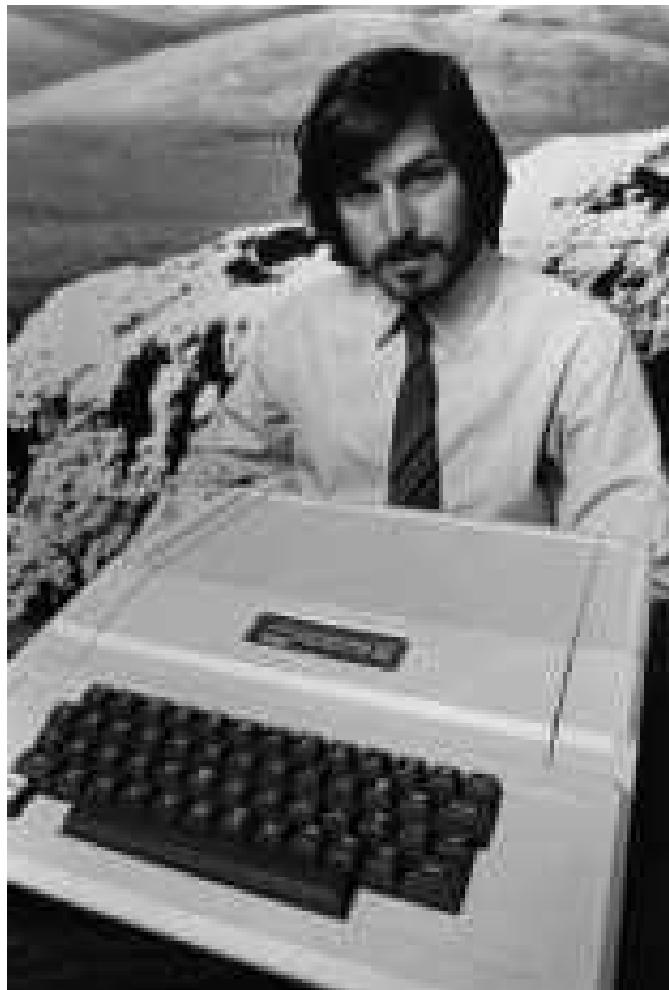


Apple I

- Steven Wozniak's design, Steven Jobs wanted to sell it.
- Had a keyboard and output video to a monitor.
- Assembled, but no case. About 30-50 still exist.



Apple II - 1977



Apple Lisa - 1982

- Based on ideas of Xerox Star
 - a Motorola 68000 Processor running at 5 Mhz
 - 1 MB of RAM
 - two 5.25" 871k floppy drives
 - an external 5 MB hard drive, and
 - a built in 12" 720 x 360 monochrome monitor.
- More personal rather than office tool
 - Expensive!
- Conceptually success, commercially failure
 - Operating system frailties
 - High cost
- It was the first personal computer to use a Graphical User Interface (GUI)
- Named for one of its designer's daughters

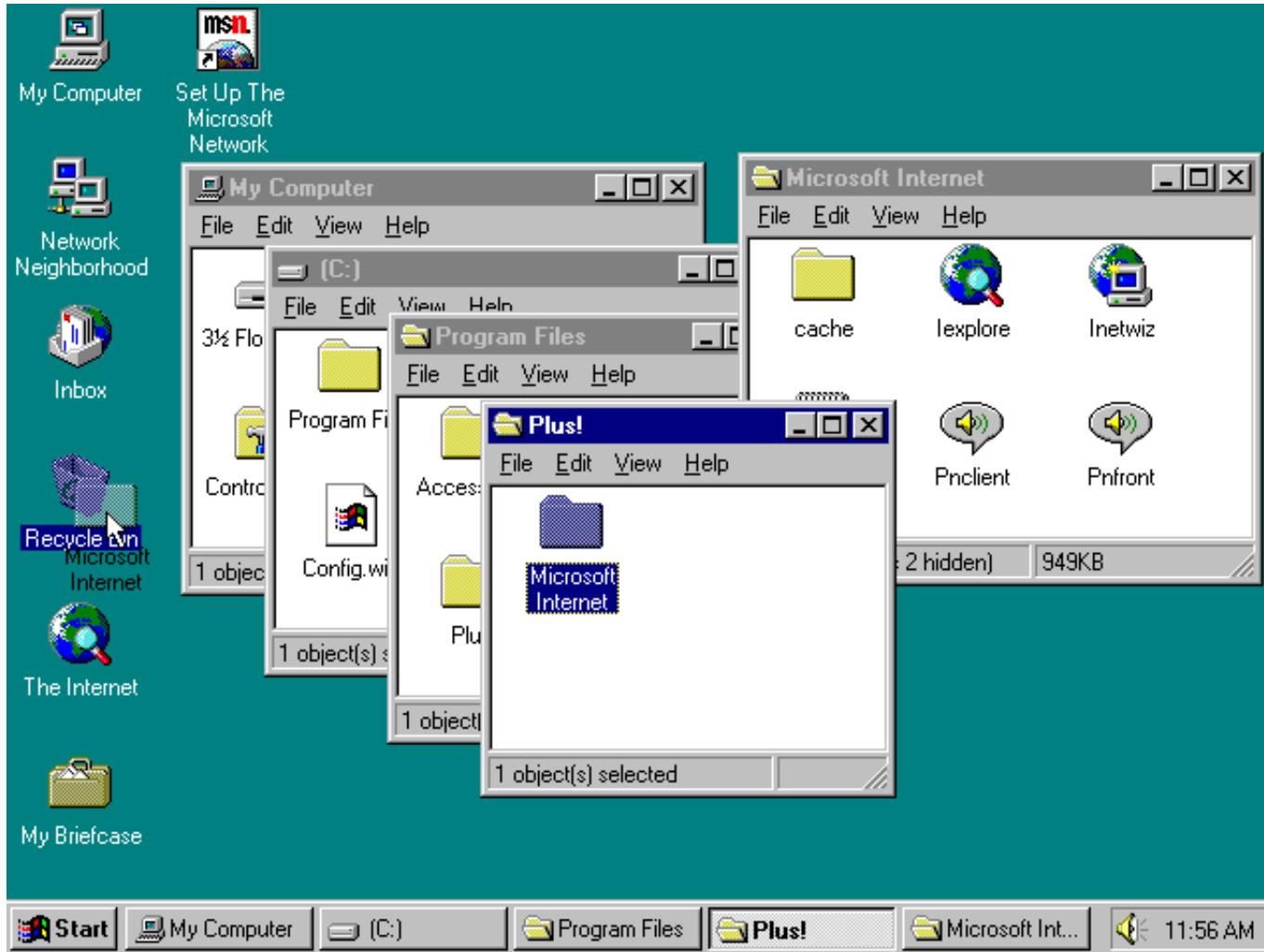


Apple Macintosh - 1984

- Aggressive pricing - \$2,500
- Not trailblazer, smart copier
- Good interface guidelines
- 3rd party applications
- High quality graphics and laser printer

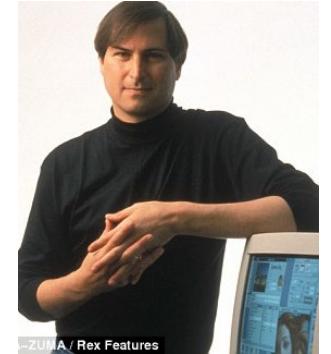


Windows 95



MAC VS Windows

- 1994: Apple sues Microsoft for copying GUI elements from Mac OS's interface design.



- Bill Gates replied:

“Hey Steve, just because you broke into Xerox’s house before I did and took the TV doesn’t mean I can’t go in later and take the stereo.”

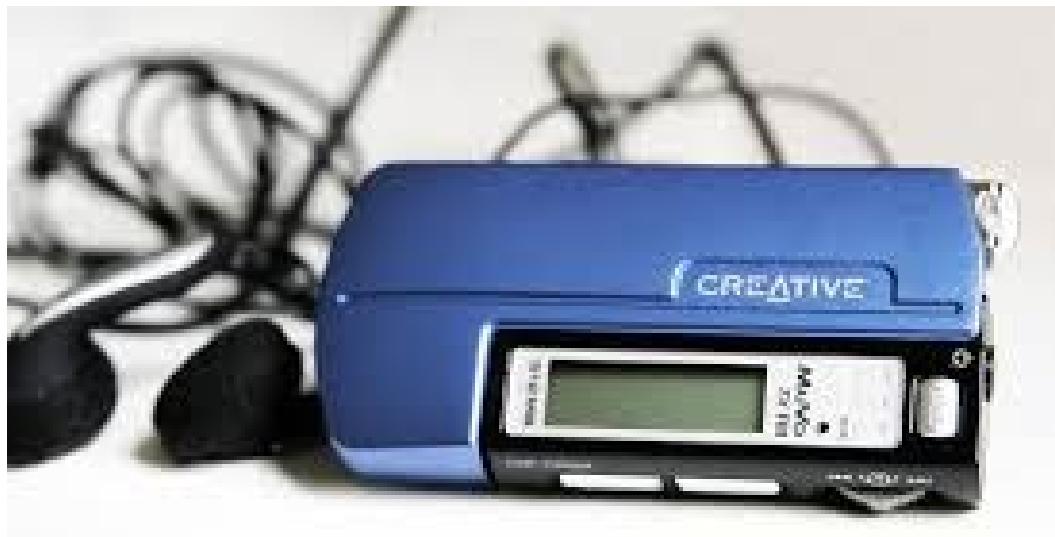


The Importance of Designer

Johnny Ive joins Apple in 1992, develops radical new designs for Mac, ipod, iphone, Macbook



Creative MP3 VS iPod



Motorola Phone VS Apple iPhone



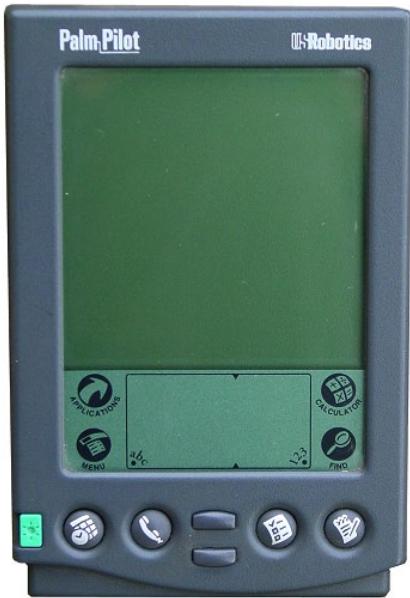
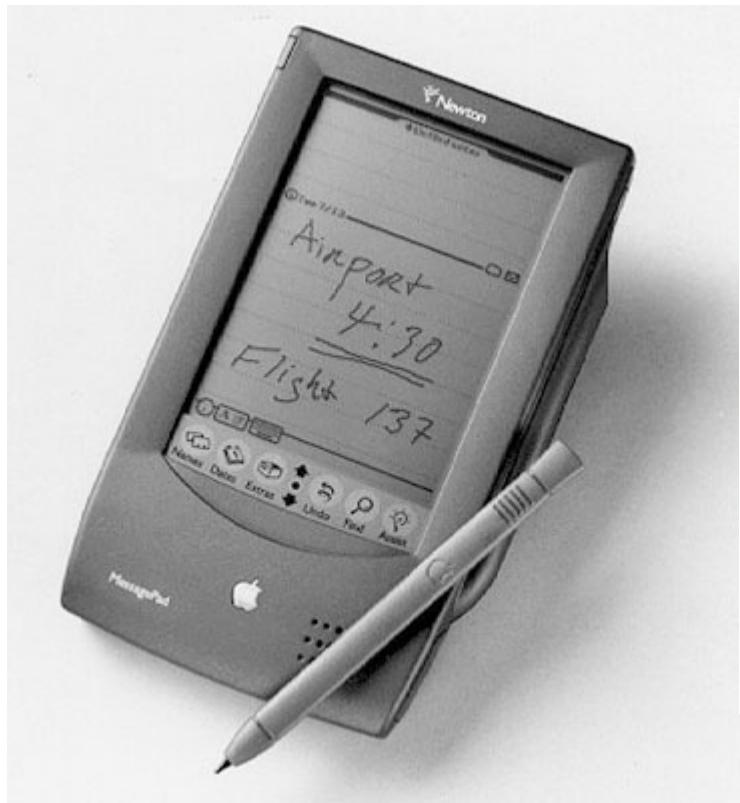
Ubiquitous computing (1988)

- Coined by Marc Weiser in 1988
 - Ph.D Univ. of Michigan 1979
 - Prof at Univ. of Maryland 79-87
 - Joined Xerox PARC 1987
 - – Head of Computer Science Lab 1988
- Vision
 - 100s of computers work together



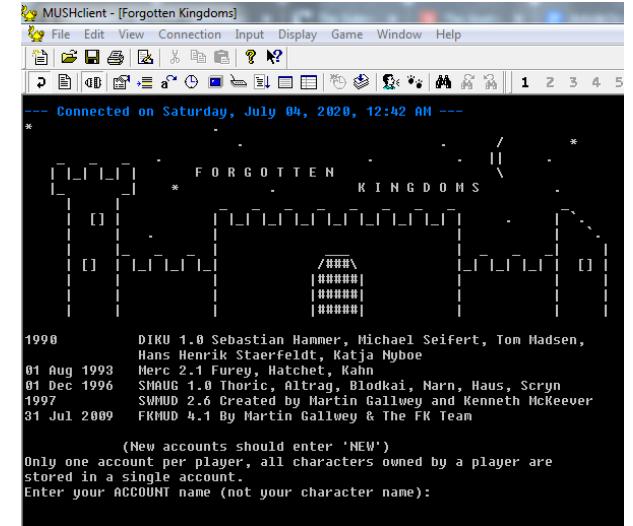
Handhelds and smart devices

- Portable computing + phone
- Newton, Palm, Blackberry, iPhone



Early multiplayer games

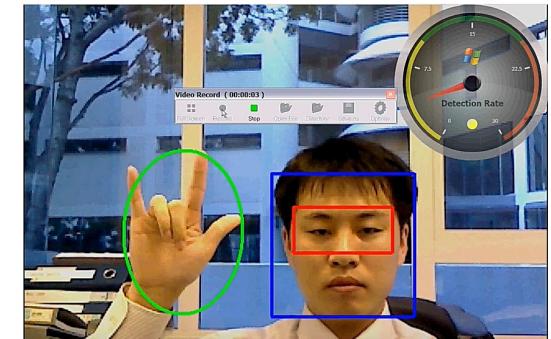
- MUDs: Multiple-User Dungeons (U. Essex 1978).
 - These were the first multiplayer, networked games.
 - The games were text-based RPGs. Compuserve ran dialup servers to support Essex-style MUDs.
- Monster and TinyMUD (1988) were MUDs that supported end-user programming and extension of the game world.



Gesture interface



Minority Report, 2002



Immersive devices

- Controller
- Data glove
- Bare hand



Computer as an assistant

- Early Automatic Speech recognition
- 1952: Bell Labs single-speaker digit recognizer
 - Measured energy from two bands (formants)
 - Built with analog electrical components
 - 2% error rate for single speaker, isolated digits
- 1958: Dudley built classifier that used continuous
 - spectrum rather than just formants
- 1959: Denes ASR combining grammar and acoustic probability
- 1972: Hidden Markov Model

Speech recognition technology

- Nuance technology: Dragon Dictate released in 1997.
- Workable speech transcription and some linkage to desktop applications (for people with disabilities or RSI)



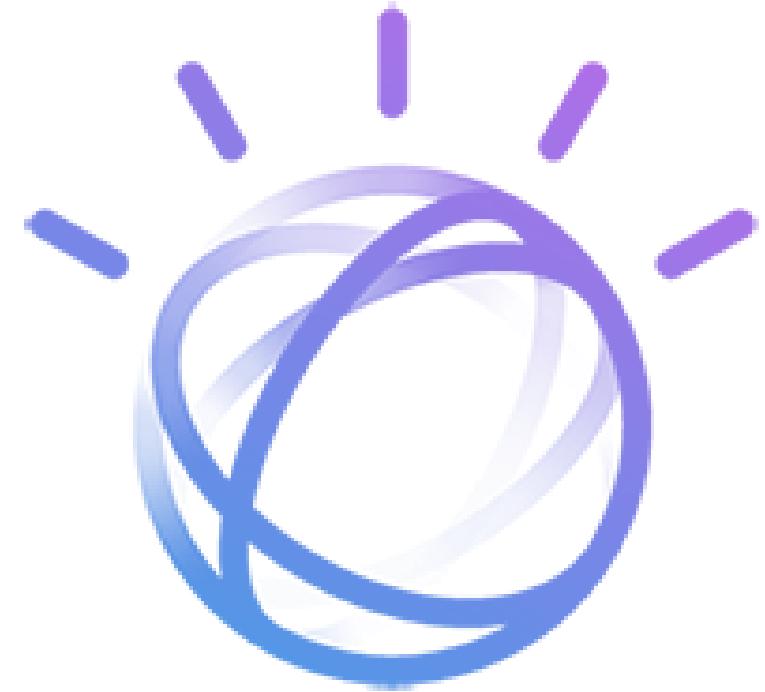
Amazon Echo Dot

- Echo Dot connects to Alexa, a cloud-based voice service, to play music, set timers and alarms, control compatible smart home devices, and more.
- Use an array of microphones to locate sound sources, and filter out extraneous sounds.



Chatbot: IBM Watson Assistant

- An AI-powered virtual agent that provides customers with fast, consistent and accurate answers across any messaging platform, application, device or channel.
- Learns from customer conversations, improving its ability to resolve issues the first time while removing the frustration of long wait times, tedious searches and unhelpful chatbots.



Conversational Agents

- Phone-based Personal Assistants
 - SIRI, Cortana, Google Now
- Talking to your car
- Communicating with robots
- Clinical uses for mental health
- Chatting for fun